



School IPM Fact Sheet

Managing Flies

Filth flies

House flies, blue and green bottle flies, and flesh flies breed in garbage and/or animal feces and are generally referred to as filth flies. They pass through four distinct stages in their life cycle: egg, larva (maggot), pupa, and adult. These flies can detect odors across long distances. Smells of souring milk from hundreds of containers thrown in dumpsters can attract thousands of flies from the surrounding neighborhood. Sanitation is the key to preventing fly problems.

House flies. House flies are the most common fly in and around schools. The adults are $\frac{1}{8}$ - $\frac{1}{4}$ inch long, and dull gray. Females lay eggs in organic material, such as garbage or decaying vegetation that has sufficient food for developing maggots. After emerging as adults, flies range 1-2 miles; some may travel as far as 20 miles. Their behaviors make them annoying—they enter buildings, hover around people, and crawl on food. They also leave fecal spots, or "specks," where they have walked, and may transfer human and animal diseases.



Blow flies—greenbottle and bluebottle flies. These flies are similar in size to house flies, but are metallic blue or green. Adults make a loud, droning buzz. They breed in dead animals, feces, and garbage. They are stronger fliers than the house fly; flight range is 3-10 miles. If a large number of these flies is found indoors, there is probably a dead animal nearby. Green bottle flies are commonly seen on animal feces outdoors.



Flesh flies. Flesh flies are 2-3 times larger than house flies (over $\frac{1}{3}$ -inch long), gray with 3 dark stripes on the body, a gray and black checkerboard pattern on the abdomen, and red eyes. Most species of flesh flies are scavengers and breed in garbage, manure, or animal carcasses. A few species are parasites of caterpillars and considered beneficial insects. Flesh flies are common in populated areas but seldom enter buildings in large numbers.



Managing filth flies

Permanent or long-term control involves locating and eliminating larval breeding sites through improved maintenance and sanitation.

Sanitation and maintenance

- Keep doors and unscreened windows closed. Install air curtain over doors that must remain open for extended periods of time.
- Make sure window and door screens are in good repair.
- Promptly fix drains or electric garbage disposal units that leak, or drains that allow food waste to accumulate under sinks or floors. Leaky drains can attract many species of flies. Remove any food waste that has accumulated under sinks or floors; or in crawl spaces or basements at the site of a broken drain, and then clean the area thoroughly.
- All food waste from the kitchen, cafeteria, and other areas should be separated from other garbage, drained so that it will be as dry as possible, and then stored in sealed plastic bags before disposal.
- Seal containers with small amounts of food waste, such as milk or yogurt cartons, in plastic bags before disposal.
- Staff should be trained to place, not toss, bags of garbage into dumpsters to avoid breaking the bags open and spilling garbage into and around the dumpster.
- In food preparation areas, rinse all cans, bottles, and plastic containers before recycling or discarding.
- Inform students, teachers, and staff about the importance of placing garbage inside the proper containers. Garbage should never be left lying on the ground.
- Promptly remove animal waste or dead animals found on school ground.
- To avoid attracting flies into the building, place dumpsters and recycling containers upwind from the outside doors of the school, particularly doors to the kitchen or cafeteria.
- Garbage cans on the school grounds should have removable domed tops with self-closing, spring-loaded swinging doors. Line cans with plastic bags that can be tightly sealed and removed daily.
- Make sure garbage can and dumpster lids close tightly and remain closed when not in use. Repair or replace dumpsters and garbage cans that have holes or lids that do not close tightly.
- Inspect dumpsters and other outdoor trash receptacles daily and remove any wastes lying on the ground.
- Wastes should be collected and moved off-site at least once a week. Since flies breed faster in warm weather, garbage removal twice a week may significantly reduce fly problems.
- Regularly clean garbage cans and dumpsters to prevent the buildup of food waste. If possible, dumpsters should be fitted with drains so that they can be hosed or scrubbed out as needed. Use a high-pressure stream of water or a brush and soapy water. A solution of borax and water will eliminate odors that attract flies. Some pest management companies will power-wash dumpster and dumpster areas as part of their service. You may need to require your sanitation company to clean the dumpster or replace it with a clean one more frequently.
- Flies can develop in soil that was soaked with water used to clean garbage cans and dumpsters. Check these areas regularly. If you see maggots, scrape them up along with the soil and dispose of everything in a tightly sealed plastic bag.
- Manage compost bins properly to avoid fly problems.

Fly traps

Adult flies can be captured with attractant fly traps or sticky fly tape. Traps can monitor the effectiveness of management programs and give moderate control in small, closed areas where fly populations are low. Electrocutation type traps should not be used because these can disperse bacteria into the environment.

Commercially available indoor light traps that attract adult flies are often used in restaurants, grocery delis, and food processing plants. They should be placed on the wall 3-6 feet from the floor, away from windows and doors. These traps may be useful in school kitchens or cafeterias where an extra measure of control is needed, such as schools located adjacent to animal farms. Only use light traps with replaceable glue boards.

Attractant traps need to be serviced regularly, and repaired or replaced when damaged. Sticky traps should be hung where people do not inadvertently contact them. For some examples of commercially available fly traps see http://schoolipm.ifas.ufl.edu/tech_np.htm#3.



Fly traps are available in several designs. Traps need to be serviced regularly, and repaired or replaced when damaged.

Chemical control

Except for odor-eliminating chemicals (such as borax) and baits (placed only inside dumpsters), pesticides are not recommended for fly management.

Low concentrations of borax in water can be used to eliminate fly odors. This solution is particularly effective for removing fly specks from walls and eaves, and for rinsing out garbage cans and dumpsters. These solutions should not be used near ponds, streams, lakes, or other bodies of water, and should not be poured onto plants.

Anyone making pesticide applications on school property must be licensed by the Board of Pesticides Control. See “Standards for Pesticide Applications and Public Notifications in Schools”.

Fruit flies

These flies are commonly seen flying around ripe fruit, especially bananas. They are about $\frac{1}{8}$ inch long. They lay their eggs near the surface of fermenting fruits and vegetables and other moist organic materials (including damp mops and cleaning rags, as well as residues in bottles, cans, garbage disposals, and drains). Their complete life cycle takes little more than a week, so the number of flies produced by a single piece of fruit is enormous. These flies are most often a problem in late summer and early fall; careful storage of fruit and vegetables is necessary at these times of the year.



Management

Fruit flies are most active from early summer through early fall. Problems with these flies can be avoided by ripening fruit in paper bags. Seal the bags by folding the top over several times and closing them with paper clips or clothespins. Once fruit is ripe, store it in the refrigerator.

If an infestation is discovered, find and remove the material that is breeding the flies. Begin with obvious sources, such as ripe fruit and vegetables; look at water seeping from refrigerators, humidifiers, or sink drains that may be fermenting; spoiled animal food; even damp, sour mops or rags. To check if the breeding source is located in a garbage disposal or drain, tape a clear plastic bag over the drain overnight. Emerging adults will be captured in the bag. Areas outside the building near windows and doors should be checked for rotting vegetable matter. All breeding sources should be removed and disposed of in a sealed plastic bag. Make sure that screens and windows near food preparation areas are in good repair.

Fruit fly trap

To make a simple trap for adult fruit flies, combine 1 cup of vinegar, 2 cups of water, and 1 tablespoon of honey in a 2-liter soda bottle. Replace the cap, shake the mixture well, and punch holes through the side of the bottle above the liquid so the flies can get in. String the bottle about 5 feet above the ground. Discard and replace the liquid as needed.



Cluster flies

Cluster flies are larger and darker than the common house fly. These flies parasitize earthworms during the summer months. Rich soil with many earthworms can support a large population of these flies. In the fall, the adults cluster on the sun-light south and west sides of buildings. As the weather gets cooler, these flies begin looking for sheltered places to spend the winter and often enter buildings through cracks and crevices.



Management

Cluster flies are not as strong fliers as house flies and can easily be killed with a fly swatter or removed with a vacuum. During warm winter periods, cluster flies in buildings become active and are attracted to windows. Opening the window and allowing them to exit is an easy control tactic for smaller infestations. Commercially available window traps can be helpful in capturing flies indoors.



Try to seal the building exterior before they find their way inside during fall. Common entryways include unscreened doors and windows, openings under siding and around roofs, unscreened ventilating spaces, cracks around windows, and holes where wires penetrate the walls of the building.

Phorid flies (humpbacked flies)

Common phorid flies are small, $\frac{1}{16}$ - $\frac{1}{8}$ inch long, with a yellowish-brown body and light brown wings. The adults seem reluctant to fly as they run around on walls, windows, and tables with a characteristic quick, jerky motion. The females are strongly attracted to odor and lay their eggs on or next to decaying material including decomposing fruit, vegetables, and meat; open wounds in animals or people; and human and animal feces. The life cycle from egg to adult takes from 14-37 days.



Management

Although it may be difficult, it is important to find the breeding site. Once found, it must be thoroughly scraped, cleaned, and dried. Large infestations of these flies are often the result of broken drains or garbage disposals that allow organic matter to accumulate in out-of-the-way places such as wall voids, under floors, in basements, or in the soil of crawl spaces.

Moth flies (drain flies)

Moth flies are dark or grayish and fuzzy, about $\frac{1}{16}$ - $\frac{1}{4}$ inch long. Their body and wings are densely covered with hairs. Wings, appearing too large for the body, are held roof-like over the body at rest, giving this fly a mothlike appearance. During the day, adults often rest in shaded areas or on walls near plumbing fixtures and on the sides of showers and sinks. During the evening, these flies can be seen walking about drains and sinks. The maggots can live in drain scum.



They may breed in large numbers at sewage filter plants and can be carried by prevailing winds to nearby buildings up to a mile away. Adults are small enough to pass through ordinary window screening.

Management

Moth flies do not bite humans but large numbers may become a nuisance. Infestations in drains often can be eliminated by flushing these areas with sink cleansers and very hot water. The most effective management tool is prevention. Regularly clean problem areas to remove the gelatinous, rotting organic matter that fly larvae feed on, including drains, sinks, wash basins, showers, dirty garbage containers, standing water in air conditioners, and other pools of stagnant water. Enzymatic cleaners and a long-handled brush are recommended for cleaning drains.

To monitor moth flies, place a glue board over a drain, sticky side down, on a collar made of cardboard. Leave in place overnight or for a few days to capture adult flies.